

Reg. No. 

--	--	--	--	--	--	--	--	--	--

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY::PUTTUR  
(AUTONOMOUS)**

**M.Tech I year II Semester Regular Examinations June 2019  
REFRIGERATION AND CRYOGENICS  
(Thermal Engineering)**

**Time: 3 hours**

**Max. Marks:60**

**(Answer all Five Units 5×12=60 Marks)**

**UNIT I**

**1** Discuss multi-stage vapour compression refrigeration systems with flash gas removal and inter cooling. **12M**

**OR**

**2** What are the factors affecting the performance of vapour compression refrigeration system explain in detail. **12M**

**UNIT II**

**3** Explain the performance aspects and the phenomenon of surging in centrifugal compressors. **12M**

**OR**

**4** Explain the working principle of a centrifugal compressor used in refrigeration system with neat sketch. **12M**

**UNIT III**

**5** Find the length of tubes in a two pass 12M TR Shell-and-Tube R-22 based, water-cooled condenser with 52 tubes arranged in 13 columns. The Heat Rejection Ratio (HRR) is 1.2747. The condensing temperature is 45<sup>0</sup>C. Water inlet and outlet temperature are 30<sup>0</sup> C and 35<sup>0</sup>C respectively. The tube outer and inner diameters are 14.0 and 16.0 mm respectively. **12M**

**OR**

**6** Discuss in detail about CFC & HCFC refrigerants. **12M**

**UNIT IV**

**7** Define cryogenics. Explain any one common method of cryogenics with neat sketch. **12M**

**OR**

**8** Explain the working of adiabatic demagnetization refrigeration system with neat sketch. **12M**

**UNIT V**

**9** Explain the process involved in liquefaction of helium gas. **12M**

**OR**

**10** List out Various liquefaction cycles. Discuss in detail about Linde system. **12M**

**\*\*\*END\*\*\***